CLAIMS

Spiral 1

A method for removing water from surfaces of various materials, comprising the steps of covering said surface with a composition having a specific weight higher than that of the water and subsequently removing water from the composition by skimming, wherein a composition essentially consisting of the following components is used:

A) a non ionic additive having a fluoropolyether structure with a fluorinated T end group containing one chlorine atom, having the following formula:

 $T-OR_f(CFY) L$ (I)

wherein

L = X - CH₂CH₂(QCH₂CH₂)_nB (Ia)

wherein:

X = CH₂O; CH₂NR"; CONR"; CH₂OCH₂CH₂NR";CH₂OCOCH₂O;

B = OH; SH; NHR"; OCH₃; OCOCH₃,

with R'' = H; C_{1-3} alkyl,

T is a fluorinated radical selected from ${\tt ClCF_2CF(CF_3)-,\ CF_3CFClCF_2-,\ ClCF_2CF_2-,\ ClCF_2-,\ }$

 $Y = CF_3 \text{ or } F$,

the radical R_f being of (per)fluoropolyether type; being in said additive of formula (X):

the number average molecular weight of the

(AF 2338/031.EST)

fluoroether part $T\text{-}OR_f\text{-}$ in the range 400-2,000,

part and the hydrogenated L part of the additive is in the range 1.50-4.00; the n parameter in formula (Ia) being such as to meet said ratio;

- B) a perfluoropolyether having number average molecular weight in the range 300-900, the ratio $K^{\rm I}$ between the number average molecular weight of the fluoropolyether part T-OR_f- of the additive and the number average molecular weight of component B) being higher than 1.60.
- 2. A method according to claim 1, wherein the number average molecular weight of the fluoroether part $T\text{-}OR_f\text{-}$ of the compounds of formula (I) component A) is preferably in the range 500-1,200, still more preferably in the range 600-1,000.
- 3. A method according to claims 1-2, wherein the perfluoropolyether component B) has number average molecular weight preferably in the range 300-650.
- 4. A method according to claims 1-3, wherein the radical $R_{\rm f}$ of fluoropolyether type preferably comprises repeating units statistically distributed along the polymer chain

(AF 2338/031.EST)

selected from: (CF_2CF_2O) , (CFYO) wherein Y is equal to F or CF_3 , (C_3F_6O) ; $(CF_2(CF_2)_2O)$ wherein z is an integer equal to 2 or 3, $(CF_2CF(OR_f, O))$, $(CF(OR_f, O))$ wherein R_f , is equal to $-CF_3$, $-C_2F_5$, $-C_3F_7$; $CR_4R_5CF_2CF_2O$ wherein R_4 and R_5 are equal to or different from each other and selected between Cl or perfluoroalkyl, preferably having 1-4 carbon atoms.

A method according to claim 4, wherein the group $R_{\rm f}$ comprises the following repeating units:

- $(a) \setminus -(CF_2CF(CF_3)O)_a(CFYO)_b$
 - wherein Y is F or CF_3 ; a and b are integers such that the molecular weight is in the above range; a/b is in the range 10-100;
- (b) -(CF₂CF₂O)_c(CF₂O)_d(CF₂(CF₂)_zO)_h-wherein c, d and h are integers such that the molecualr weight is within the above range; c/d is in the range 0.1-10; h/(c+d) is in the range 0-0.05, z has the above value, h can be equal to 0;
- (c) -(CF₂CF(CF₃)O)_e(CF₂CR₂O)_f(CFYO)_gwherein Y is F or CF_q; e, f, g are integers such
 that the molecular weight is within the above
 range; e/(f+g) is in the range 0.1-10, f/g is in the
 range 2-10;
- (d) $-(CF_2O)_j(CF_2CF(OR_f.)O)_k(CF(OR_f.)O)_1$

(AF 2338/031.EST)

wherein: R_f is $-CF_3$, $-C_2F_5$, $-C_3F_7$; j,k,l are integers such that the molecular weight is within the above range; k+l and j+k+l are at least equal to 2, k/(j+1) is in the range 0.01-1,000, 1/j is in the

k/(j+1) is in the range 0.01-1,000, 1/j is in the range 0.01-100;

- (e) $-(CF_2/CF_2)_zO)_s^-$ wherein's is an integer such as to give the above molecular weight, z has the already defined meaning;
- (f) $-(CR_4R_5CF_2CF_2O)_j$, wherein R_4 and R_5 are equal to or different from each other and selected from H, Cl or perfluoroalkyl, having 1-4 carbon atoms, j' being an integer such that the molecular weight is the above one;
- (g) $-(CF(CF_3)CF_2O)_{j^*}$
 j" being an integer such to give the above molecular weight.
- A method according to claims 1-5, wherein the value K^I is higher than 2.00 and preferably in the range 2.00-3.00.
- 7. A method according to claims 1-6, wherein the perfluoropolyether component B) preferably has the following
 structure:

T'-O-R_f-T"

wherein:

Rf has the above meaning;

(AF 2338/031.EST)

549 B4 T'and T", equal to or different, are selected from $-CF_3$,

A method according to claim 7, wherein the perfluoropolyether component B) has a structure selected from the following:

 $T'O(C_3F_6O)_a$. (CFYO)_b. T''(III)

> where in Y = F or CF_3 , a" and b" are integers such that the molecular weight is within the range with a"/b" in the range 1-40; T' and T" are as above defined.

 $T'O(C_2F_4O)_p(CF_2O)_qT"$ (VI)

> wherein p and q are integers such that the molecular weight is within the indicated range with p/q in the range 0.6-1.2; T' and T" are as above.

 $T'O(C_3F_6Q)_s.T"$ (V)

> wherein s' is an integer such that the molecular weight is within the indicated range; T'and T" are as above.

- A method according to claims 1-8, wherein the amount of additive A) in the compositions is lower than or equal to 0.1% by weight, preferably lower than 0.05% with respect to the total weight of the composition.
- A composition according to claims 1-9. 10.
- Non ionic additive having a fluoropolyether structure 11.

(AF 2338/031.EST)

Hall All the the the